

were females. The mean age and Charlson Co-morbidity Index score were higher among patients who received INF compared to those on ETA. All-cause PPPM costs were higher among patients who received ETA (\$6320) compared to patients who received INF (\$2313). The magnitude of the difference was greater among patients who received INF alone (\$3368) compared to ETA alone (\$8257, $p < 0.05$). Differences in total health care costs persisted after adjustment for covariates ($p = 0.0366$). Similar results were obtained when excluding outlier patients with high cost (outliers were defined as those patients with values more than 2 standard deviations above the mean). **CONCLUSION:** This study indicates that INF therapy is associated with lower all cause health care costs compared to ETA therapy, in the treatment of patients with PsA. The choice of a biologic treatment on health care costs should be considered when evaluating treatment strategies.

PAR7

EVALUATION OF PHARMACOLOGIC TREATMENTS OVER 30 MONTHS FOR OSTEOARTHRITIS USING A NATIONAL MANAGED CARE DATABASE

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OBJECTIVES: To evaluate trends in utilization and cost of pharmacologic treatments of osteoarthritis (OA). **METHODS:** A retrospective analysis of OA patients (>18 years of age) in the PHARMetrics database during 2001 and 2002 was conducted using an observation period (January 2003–June 2005) divided into ten quarters. Patients were retained if they had continuous eligibility, at least two OA diagnoses, OA drug use during the observation period, no cancer, HIV or organ transplant, and were not in a nursing home. The percentage of days of drug availability, proportion of patients and cost were evaluated by type of pain treatment and adjunctive therapy (i.e., ulcer medications, hypnotics, and antidepressants). Patients' treatments were assessed at the first quarter and followed through the tenth quarter. Random coefficient models for utilization and cost outcomes were evaluated, by treatment, using mixed model analysis of variance. **RESULTS:** Eligible patients (N = 9972) were, on average, 55.1 years old (SD 9.7) and 65.6% were female. Common comorbidities included endocrine or immunity disorders (71.9%), hypertension (59.0%), and obesity (17.6%). At the end of 30 months, the percent change in the number of subjects using COX-2s and NSAIDs indicated a reduction of 76% and 10%, respectively. Individual growth models on utilization and cost for COX-2 ($p < 0.001$) confirmed the trend. Among NSAID users, 35% used 2 or more different NSAIDs and 18.1% of these had an average time between NSAID switches of 90 days or less. Narcotics showed a significant increasing trend in percentage of days use and costs ($p < 0.001$). **CONCLUSION:** Trends over 30 months suggest, increasing narcotic use, high discontinuation of COX-2s, and a high proportion of NSAID patients with switches within 90 days. No single dominant therapy over time appeared in this study suggesting there is a potential for new approaches and reconsiderations for OA treatment.

PAR8

NEW AUDIENCE FOR PATIENT-REPORTED OUTCOMES (PRO) DATA: PATIENTS

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OBJECTIVES: While health care providers find PRO data valuable for managing patients' care, they also see a need for more

patient involvement. This research was conducted to gather input from patients and providers about the value of health outcomes data for patients in the area of rheumatoid arthritis with or without psoriasis. **METHODS:** We conducted follow-up telephone interviews with a sample of 50 individuals (27 physicians, 11 nurses, 12 patients) who participated in one of two programs associated with rheumatoid arthritis. The programs were designed to provide patient feedback about experiences with a given prescription medication to physicians via one-page graphical reports. The semi-structured interviews included questions regarding providers' impressions of the feedback and its value for patients. Patients were asked about the program and the value of feedback for them. This qualitative analysis summarizes their responses. **RESULTS:** Of the 27 physicians interviewed, 56% (n = 15) were dermatologists and 44% (n = 12) rheumatologists. Eleven nurses from dermatology practices and 12 patients with rheumatoid arthritis were interviewed as well. Participants were in general agreement that the feedback was useful for monitoring patients' responses to treatment, when viewed in conjunction with clinical observations. Many providers stated that they could show the feedback to the patient, "in black and white", and begin a discussion. Most patients report participating in the programs because they want their physicians to receive the feedback. Many patients also expressed an interest in receiving the feedback themselves to track their progress, independently and relative to other patients. A few physicians echoed this sentiment, stating that through the feedback patients could feel connected and that may increase involvement in their care. Providers however, emphasized that the information be provided in "patient-friendly" terms. **CONCLUSION:** Based on this research, a new audience for health outcomes data—delivered in simple, straightforward terms—is patients themselves.

PAR9

IMPACT OF PATIENT'S OUT-OF-POCKET COST ON ADHERENCE AND PERSISTENCE WITH BIOLOGIC THERAPIES FOR RHEUMATOID ARTHRITIS

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OBJECTIVES: Assess impact of high patient out-of-pocket expenditures (OOP) on adherence and persistence with biologics for treatment of RA. **METHODS:** An incidence cohort of RA patients with pharmacy claims for etanercept or adalimumab during 2002–2003 was selected from a database of insurance claims from self-insured employer health plans (N = 2311). Adherence was defined as the medication possession ratio (MPR), proportion of the 365 days follow-up covered by days supplied. Persistence was determined using a survival analysis of the likelihood of discontinuing therapy. Patient's OOP was measured in two ways: 1) patient's coinsurance and co-payments per week of therapy, and 2) proportion of the biologic medication's cost paid by patient. Multivariate linear regression models of MPR and proportional hazard models of persistence estimated the impact of cost, adjusting for insurance type and demographic and clinical variables. **RESULTS:** OOP expenditure averaged \$8 per week (SD \$14, range \$0 to \$127). Only a very small proportion of patients (3.9%) paid more than \$50 per week. The mean (SD) MPR for all patients was 0.52 (0.31). Adherence significantly decreased with increased weekly OOP (Coeff -0.0035, $P < 0.0001$) and when patients paid a higher proportion of therapy costs (Coeff -0.8890, $P < 0.0001$). This translates into approximately one week of therapy lost for every \$5.50 increase in weekly OOP. Adherence was lower for younger patients, women and those with more comorbidities. Patients whose

weekly cost exceeded \$50 were more likely to discontinue than patients with lower costs (HR 1.59, $P < 0.001$). **CONCLUSION:** The majority of patients have very reasonable OOP for biologics. However, a small number of patients are burdened with high OOP costs. The adverse impact of high OOP on adherence and persistence needs to be considered when making decisions about increasing co-pays.

PAR10

MANAGEMENT OF RHEUMATOID ARTHRITIS—FINDINGS FROM A CLAIMS DATABASE ANALYSIS

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OBJECTIVES: Rheumatoid Arthritis (RA) imposes a significant burden of disease to both affected patients and the society as a whole. We performed the first German claims database analysis among members of a statutory health insurance fund to estimate RA treatment prevalence, to describe prescription patterns and assess overall disease burden. **METHODS:** We based our analysis on billing data from the years 2000 to 2004 of a German sickness fund covering 1.5 million beneficiaries. RA patients were identified by either inpatient or sick leave records due to ICD-10 codes (M05, M06) or at least two prescriptions of a disease-modifying drug (DMARD) or a TNF- α inhibitor. We excluded patients with a variety of co-medications and diagnoses, e.g. Psoriasis, Crohn's Disease and malignant disease. We specified treatment prevalence and patterns of RA disease management with DMARDs and TNFs in the selected population. **RESULTS:** Out of the 728,111 beneficiaries continuously enrolled between 2000 and 2004 $n = 5850$ (mean age: 43 ± 14 years) fulfilled the inclusion criteria for RA. RA treatment prevalence, standardized to the general German population was 0.68% for men and 1.25% for women. 43% of the patients with RA were treated with DMARDs and 3.2% received TNF- α inhibitors. 26% of RA-patients were initiated on DMARD therapy by a general practitioner. Compared to the RA population as a whole patients receiving TNF- α inhibitors were characterized by a 2.6 fold number of sick leaves and a 6.4 fold number of hospitalizations in the year prior to therapy initiation. **CONCLUSION:** The RA treatment prevalence found in this study is in line with local epidemiological research. As less than half of RA-patients had a prescription of a DMARD, this may indicate that therapeutic standards are not met. TNF- α inhibitors are mainly prescribed in a high burden RA subpopulation.

PAR11

ECONOMIC EVALUATION OF BIOLOGIC RESPONSE MODIFIER SPECIALTY PHARMACY PRIOR AUTHORIZATION PROGRAM

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OBJECTIVES: The purpose of this study was to evaluate the impact of specialty pharmacy prior authorization (SPA) program on prescription costs for the biologic response modifiers (Amevive, Enbrel, Humira, Kineret, Raptiva, and Remicade)—a new class of medication for the treatment of several disease states such as Rheumatoid Arthritis. **METHODS:** Prescription data were obtained from a pharmacy benefit manager's pharmacy claims database. This study used a retrospective case-control one-to-one matching approach based on patient age, gender, and client characteristics including the number of eligible members, client type and region. The case clients had enrolled in the SPA program in January 2005 and had remained part of the program by December 31, 2005. Clients whose members did not use the

biologic response modifiers were excluded from the study. Per eligible member per month (PMPM) total costs was the outcome measured. **RESULTS:** The average PMPM total, plan and member costs were \$1.33, \$1.30, and \$0.03 in the case group, while the average PMPM total, plan and member costs were \$1.51, \$1.47 and \$0.04 in the control group. Clients who implemented a specialty pharmacy prior authorization program for the biologic response modifiers saved an estimated PMPM total cost of \$0.18. **CONCLUSION:** Implementing a specialty pharmacy prior authorization program reduced prescription drug costs for the biologic response modifiers.

PAR12

INCREASE IN ECONOMIC BURDEN OF HIP AND KNEE REPLACEMENTS IN THE UNITED STATES: ESTIMATED FROM THE HEALTH CARE COST AND UTILIZATION PROJECT—NATIONAL INPATIENT SURVEY

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OBJECTIVES: A major component of the economic burden associated with the treatment of arthritis relates to surgical joint replacement of the hips or knees. The objective of this study is to compare the burden of hip/knee replacements performed in the U.S. in the year 2000 and 2004. **METHODS:** The Health Care Cost and Utilization Project—"National Inpatient Survey" (HCUP-NIS) was analyzed to estimate the changes in the burden of hip and knee replacements in the U.S. The HCUP itself is a compilation of billing data which can yield estimates of national hospital charges as well as the total number of hip and knee replacement procedures. In 2004, the HCUP-NIS database contained nearly 8 million records from about 1000 hospitals. The ICD-9-CM procedure codes used in identifying patients are 81.51 (total hip replacement) and 81.54 (Total/partial knee replacement). **RESULTS:** In the year 2004, approximately 225,900 total hip replacement and 431,458 total knee replacement procedures were performed in the U.S. This is a 37% increase in hip replacement procedures and a 53% increase in total knee replacements compared to the year 2000 (164,458 total hip replacement and 281,534 total knee replacement). In terms of economic burden, the national bill of hospital charges increased by 111% (from \$10.8 billion in year 2000 to \$22.9 billion in year 2004). **CONCLUSION:** The data shows a steep increase in the burden of joint replacements. Not considering pre and post-operation care, the estimated hospital charges for joint replacements alone were nearly 22.9 billion dollars in the United States during the year 2004. This data, however, does not provide reasons of steep increase in the burden of joint replacements during this four year period. Further study is needed to address these issues.

ARTHRITIS—Methods & Concepts

PAR13

TUMOR NECROSIS FACTOR INHIBITORS—A PHARMACOECONOMIC REVIEW OF ITS USE IN ANKYLOSING SPONDYLITIS

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OBJECTIVES: The introduction of tumor necrosis factor (TNF) inhibitors such as etanercept and infliximab has represented a critical advance in the available treatments for patients with Ankylosing Spondylitis (AS). Several clinical studies have shown superior efficacy of TNF inhibitors, but high costs and infrequent instances of serious adverse side effects ask for priority setting. The aim of this review was to identify and summarize the phar-